

# CLOUD CULTURE CALLS FOR FLEXIBLE NETWORKS

*Cloud-based workloads demand more flexibility, so how can businesses rethink their WAN strategies to accommodate this? **Rene Millman** reports*

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**W**ith more and more workloads being cloud-based, there is a greater need for agility and flexibility from an enterprise's wide area network ([WAN](#)). This agility and flexibility can be found in the

latest software-defined WANs ([SD-WANs](#)), but this means that businesses need to rethink their strategy around these next-generation technologies.

As with all major networks in today's enterprise ecosystem, the next generation of WAN will be increasingly software-defined. "We are already seeing the huge impact that software-defined network ([SDN](#)) technology has had on WAN, with the inception and now widespread use of SD-WAN services," says Oliver Cantor, associate director of product strategy at Verizon. "This trend is set to accelerate in the future and we expect the process of managing WANs through SD platforms will grow even further."

## UNLOCKING THE BENEFITS

Cantor says unlocking the benefits of SD-WAN in the near term due to business and customer demand is clearly important and growing rapidly. "In addition, we will see the purchasing and contracting models for WAN evolve towards a utility-based model focusing on opex [operating expenditure] rather than capex [capital expenditure] and pay-as-you-go monthly licensing."

The reasons behind the need for next-generation networks are manifold. Businesses are looking to cut their IT spend and improve operating costs while delivering services more quickly and maintaining superior-quality services. In an attempt to do that, enterprises are looking for systems that are [agile](#) and easy to deploy.

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[Cloud-based applications](#) and infrastructure platforms are the right match to meet the high-level business objectives. Enterprises are adopting software-as-a-service (SaaS) such as [Microsoft Office 365](#) and [Salesforce](#), making made the internet an essential component of the enterprise backbone.

Archana Kesavan, senior product marketing manager at ThousandEyes, says that when the internet becomes the backbone of enterprise communication, organisations need to think proactively about their next-generation WAN having network monitoring tightly integrated within it.

"As these trends continue and [IoT](#) [internet of things] deployments continue to proliferate, the need for a more robust next-generation WAN that is agile, responsive and cloud-friendly as well as a network monitoring solution for this kind of environment becomes even greater, given the myriad network and application dependencies," says Kesavan.

At the heart of the issue is who will use next-generation WANs and for what purpose, says Tony Lock, director of engagement and distinguished analyst at Freeform Dynamics. "The business case for developments such as [5G](#) are far from clear, especially for the telcos that have to acquire the air-wave licences and build the core infrastructure," he says.

So far, says Lock, the technology standards are well developed, although there is still much to do,

» Networking analyst John Burke explains managed SD-WAN and discusses why providers are starting to offer the service to their customers.

but the question of which customers are going to pay to use it and how much are they willing to pay has never been tackled convincingly.

"There is lots of speculation that the IoT needs 5G, but the fact is it doesn't, or not until things get far more widely deployed than now," he says. "And the forecasts of growth do appear to be at least a little optimistic."

The shift to next-generation WAN is being fuelled by the realisation that access via the public internet is still not reliable enough to give businesses the service quality, performance and reliability they need. Network administrators need flexibility and choice when it comes to the transfer of data.

"The key here is the ability to choose the right infrastructure to meet customer demand," says Conrad Mallon, chief network architect at SSE Enterprise Telecoms. "If low-cost private connectivity is universally available, it is likely to be the preferred choice, but if alternatives such as internet and radio backhaul provide greater reach, faster turn-up or lower cost, they have to be considered."

Marc Sollars, CTO at systems integrator Teneo, says these increasingly complex WANs demand a strategy that provides end-to-end visibility into the global network, from the user's experience to the [cloud](#), and one that automates many of the processes used to

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manage WAN performance and security with as little burden on the network team – and their budget – as possible.

“Many networking technologies are now available in as-a-service delivery models,” says Sollars. “It’s just as important to consider how you’re going to manage the technology as deciding what networking technology you’re going to deploy.”

Most global businesses are looking for one or all of three fundamental improvements from running their WANs: faster provisioning of new sites/services; greater reliability and based on simpler and faster device configuration and application-driven performance rules; and reducing overall networking costs by smarter routing of traffic, with reduced reliance on often-costly [MPLS](#) networks.

SD-WAN technologies help global companies boost their application performance by configuring their network traffic and performance options centrally and rapidly. Analyst IDC predicts an \$8bn SD-WAN market by 2021.

“While companies use different types of connectivity – from MPLS and internet to [4G](#) – to expand and grow, challenges include poor branch application performance, connectivity issues, security concerns over encryption as users move between devices, and rising network maintenance costs over time,” says Sollars.

He adds that based on a mix of software and hardware technologies, SD-WAN creates a control layer from the physical

networks and components in place. “It enables network teams to route appropriate traffic over different links and configure new sites’ networking needs remotely, avoiding in-situ provisioning.”

## LITTLE CONTROL AND VISIBILITY

A problem for many IT managers is that they have very little control and visibility over their networks. They tend to receive a monthly report setting out how much [bandwidth](#) they have used, and possibly the top apps they have used, but this is retrospective and doesn’t give much insight into tuning the network.

“Next-generation WAN enables reporting that tracks and analyses end-to-end application performance in real time, so the network can quickly react to any changes,” says Chris Gilmour, technical practice lead at Axians.

As well as solving business issues, next-generation WANs must overcome their own design problems to be of use to the rest

of the business. Dave Chen, product manager at HPE Aruba, says the most important aspect of designing a next-gen WAN is understanding how it will be used, and what other factors are present.

“The WAN must be intelligent enough to understand and adapt to the changing behaviour of users on the network, and the changing dynamics of the access layer, as well as any combination of [firewalls](#), applications and third-party services,” he says. “This

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means that IT must take a holistic view of all branch networks and optimise any component that contributes to the flow of traffic."

When they set up [next-generation WANs](#), enterprises need to consider how they will actually use them. Lock says usage has always revolved around services and device configurations. "Working out what services are required and by whom should always be the first step in any project, never mind something as big as WAN infrastructure," he says. "But this is not always followed efficiently, effectively and thoroughly, without 'blinkers' restricting the view ahead."

ThousandEyes' Kesavan says enterprises need to think about what matters to the business and take a holistic view of service delivery and user experience. "Understand service delivery and application performance as it relates to user-experience and not in silos," she says. "Network infrastructure, internet routing and device behaviour can all affect performance and end-user experience, and understanding all these aspects is critical."

## NO ONE SIZE FITS ALL

Although there is no one-size-fits-all approach to building a business case for next-generation WAN, the benefits vary significantly according to industry and location. But at its core, it is a new networking mindset. "Over the next 12 to 18 months,

enterprises are likely to increasingly look to implement next-generation WAN setups to help power a seamless shift to cloud computing more quickly," says SSE Enterprise Telecoms' Mallon.

In the future, 5G looks set to combine several features to create a next-generation network, says Todd Krautkremer, CMO at Cradlepoint. "It will have all the features of 4G, with its capacity

for massive mobile data; it will offer the voice, video and mobile data features of [3G](#); it will fall back to [2G](#) for IoT deployments; and it will include [Wi-Fi](#) spectrum," he says. "With virtually zero latency and gigabit throughput, these features will together form the next-generation 5G WAN."

Krautkremer points out that the potential benefits of 5G technology are huge: less latency with more throughput, connection density, spectrum efficiency, traffic capacity and network efficiency – and all happening within the next couple of years.

"The challenge for network suppliers will be to manage and balance [latency](#) and bandwidth while tailoring the network elements, such as network function virtualisation [[NFV](#)] for the needs of their customers," he says. "To manage the next-generation network, companies will need to consider the value of hardware combined with SDN technology. Enabling this on the next-generation 5G WAN will be fundamental for [secure connectivity](#)." ■

## "THE CHALLENGE FOR NETWORK SUPPLIERS WILL BE TO MANAGE AND BALANCE LATENCY AND BANDWIDTH WHILE TAILORING THE NETWORK ELEMENTS"

TODD KRAUTKREMER, CRADLEPOINT

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